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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BANANKHAH, MAJID A

ART UNIT

PAPER NUMBER

2127

DATE MAILED: 06/07/2004

16


Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/606,839

Applicant(s)

KARDACH, JAMES P. 

Examiner

Majid A Banankhah

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. This final office action is in response to amendment, filed April 23, 2004. Application's argument has been fully considered but they are moot in view of the new ground of rejection.

2. The text of those sections of Title 35, U.S. code not included in this office action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-11, 13-15, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacDonald (U.S. Pat. No. 6,295,574, hereinafter MacDonald) in view of Simpson (EP0742522A, hereinafter Simpson).

Per claim 1, teaches, Receiving a real time analog data (col. 5, lines 17-32, RT peripheral 114, data measured from a device) at a personal computer (Fig. 1, CPU 102) implementing a general purpose operating system (multi-tasking operating system, col. 1, lines 15-26), generating real time interrupt indicating a request to process real-time data at a central processing unit (col. 5, lines 33-54, interrupt service routine RTI peripheral 114, and processing time within the device cannot exceed the sample interval [real-time], CPU 102, see also, col. 3, lines 46-63); and

While the system of MacDonald suggesting the highest priority assignment to be given to real time interrupts but fails to teach of a step or means for determining the real time interrupts among the interrupts (real time and non real time). However, the reference of Simpson teaches of a method and means for handling multiple priority interrupt requests wherein arbitration circuit is provided for determining a priority status for each interrupt signal with the highest priority status and output circuitry, and an outputting circuitry, operable to output an interrupt signal only in response to an interrupt signal having a higher priority status than any currently executing interrupt process (see, Simpson (see, col. 1, lines 34-56).

processing the real-time event if the real time interrupt has a higher priority than the non real time operation (col. 1, lines 34-56). Non real time operation is any operation such as currently executing interrupt process in the above-cited paragraph.

Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use priority determination scheme of Simpson in the real time interrupt handling system of MacDonald, for the reason to be able to direct processors attention to high priority real time data than processing the less urgent or non real time data. Simpson suggests the motivation in col. 1, lines 22-29.

Per claim 2, continuing processing the first event if the real-time event does not have a higher priority than the first process. In the system of Simpson, by default, when there is no higher priority interrupt than the currently running process (operation), the priority of the running process is higher and therefore, the process continue to run without interruption.

Per claim 3, the context and state of the executing task is saved before the interrupt service routine is executed and the states are restored after execution of the real time [high priority] data is executed (see, MacDonald, col. 43-63, and col. 2, lines 18-39).

Per claims 4 and 5 are rejected for the reason explained in the rejection of claim 1. The method of Simpson, determine the priority among interrupts and make a determination as to which interrupt has the highest priority (see, Simpson, col. 1, lines 34-56). It is obvious that the processing will continue if the priority of the real time is not higher than the priority of the real time, because the arbiter looks at the priority and does not know whether the data is real time or not.

Per claim 6, the claim is rejected for the reasons stated in the rejection of claim 4, and the reference of Simpson further teaches of returning to execution of the interrupted process, meaning that the interrupted process is terminated when the arbiter receives a higher priority interrupt.

Per claim 7, a chipset (Fig. 1, 100), a bus coupled to the chipset (bus bridge 106); and a central processing unit (CPU), coupled to the bus (CPU 102), to generate a real time interrupt upon receiving real time analog data (col. 5, lines 33-54, interrupt service routine RTI peripheral 114, and processing time within the device cannot exceed the sample interval [real-time], CPU 102).

While the system of MacDonald suggesting the highest priority assignment to be given to real time interrupts but fails to explicitly teach of processing data associated with real time interrupt if the real time interrupt has a higher priority than a non real time operation currently being processed. However, the reference of Simpson teaches of a method and means for handling multiple priority interrupt requests wherein arbitration

circuit is provided for determining a priority status for each interrupt signal with the highest priority status and output circuitry, and an outputting circuitry, operable to output an interrupt signal only in response to an interrupt signal having a higher priority status than any currently executing interrupt process (see, Simpson (see, col. 1, lines 34-56). processing the real-time event if the real time interrupt has a higher priority than the non real time operation (col. 1, lines 34-56). Non real time operation is any operation such as currently executing interrupt process in the above-cited paragraph.

Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use priority determination scheme of Simpson in the real time interrupt handling system of MacDonald, for the reason to be able to direct processors attention to high priority real time data than processing the less urgent or non real time data. Simpson suggests the motivation in col. 1, lines 22-29.

Per claim 8, timer is inherent in an interrupt service routine disclosed in MacDonald (See also col. 3, lines 35-44, clock cycle), and generating real time interrupt is taught in col. 3, lines 46-63.

Per claim 9, processing real time interrupt is taught by MacDonald in col. 3, lines 46-63 (RTI), Simpson teaches of detail of an interrupt handler (see, Simpson col. 8, lines 9-42).

Per claim 10, register to store real time data is shown by MacDonald (see Abstract, registers allocated for real time use are indicated in the RTI register).

Per claim 11, as discussed in the rejection of claim 1, the reference of Simpson teaches of relative priority between real time interrupt and non real time operation.

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Per claim 13, the claim is rejected for the reasons stated in the rejection of claims 8-10.

Per claims 14 and 20 using radio signal, as analog data does not modify the method of MacDonald, therefore, it is obvious to use radio signal as analog data if this is users desire.

Per claim 15, Simpson teaches of interrupt handler in col. 1, lines 34-65 (indication is held by storage circuitry and selecting the one interrupt signal with highest priority status).

Per claim 19 and generating real time interrupt in response to receiving timing signal from the timer is taught by MacDonald in col. 3, lines 46-63.

5. Claims 12, 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacDonald (U.S. Pat. No. 6,295,574, hereinafter MacDonald) in view of Simpson (EP0742522A, hereinafter Simpson), further in view of Williams et al. (U.S. Pat. No. 5,764,582).

Per claims 12 and 16 the modified MacDonald fails to explicitly teach of analog to digital converter, However, the use of analog to digital converter is well known in the art as it is evidenced by Williams, in col. 4, lines 1-37 (D/A and A/D converters), for the reason to be able to process analog data and convert analog into digital. Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use Williams's analog to digital converter.

Per claim 17, registering is taught by MacDonald in the abstract, and col. 3, line 64 to col. 4, line 5.

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Per claim 18, the timing signal is created by the clock cycle, and MacDonald teaches storing the interrupting the register in col. 3, lines 46-63.

6. Applicant on pages 8-10 of the Remarks argues in substance:

“Williams does not disclose or suggest generating a real-time interrupt indicating a request to process the real time data at a CPU. In response, since Williams is cited in this rejection in combination with MacDonald and Simpson, it must be pointed out that this reference is used primarily to show that analog to digital and digital to analog converters are well known in the art. One cannot show non-obviousness by attacking the references separately. The Examiner is not relying on this reference to show real time interrupt handling features. This reference is used to show that analog to digital conversion is well known in the art.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. **Applicant's amendment necessitated the new ground of rejection; therefore, THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE The application has been amended as follows:

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ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Maid A. Banankhah** whose voice telephone number is (703) 308-6903. A voice mail service is also available at this number.

All response sent to U.S. Mail should be mailed to:

Commissioner of Patent and Trademarks

Washington, D.C. 20231

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-9600.

Maid Banankhah

6/3/04


MAID BANANKHAH
PRIMARY EXAMINER